

What is claimed is:

1. An ultraviolet (UV) fluid treatment system for small enterprise and consumer use, comprising:
  - a fluid treatment zone having a fluid inlet and a fluid outlet;
  - a UV emitter mounted within the fluid treatment zone;
  - a sensor unit disposed within the fluid treatment zone, the sensor unit including at least fluid flow sensing means to sense fluid flow within the fluid treatment zone and UV sensing means to sense UV light levels;
  - an intelligent driver for receiving a fluid flow indication and a UV light level indication from the sensor unit, and for controlling operation of the UV emitter in response to at least one of the fluid flow indication and the UV light level indication; and
  - an indicator in communication with the intelligent driver for providing a user with information related to operation of the fluid treatment system.
2. The UV fluid treatment system of claim 1, wherein the UV emitter is a mercury vapour lamp.
3. The UV fluid treatment system of claim 1, wherein the sensor unit is self-contained within a housing.
4. The UV fluid treatment system of claim 1, wherein the sensor unit is remote from the UV emitter.
5. The UV fluid treatment system of claim 1, wherein the fluid flow sensing means includes sound/vibration sensing means.
6. The UV fluid treatment system of claim 5, wherein the fluid flow sensing means includes sound/vibration generation means.
7. The UV fluid treatment system of claim 5, wherein the sensor unit includes a sensor microprocessor for reading a signal level from the sound/vibration sensor, for processing the signal level to determine the fluid flow indication, and for providing the fluid flow indication to the intelligent driver.

8. The UV fluid treatment system of claim 1, further including auxiliary sound generation means disposed within the fluid treatment zone.

9. The UV fluid treatment system of claim 8, wherein the auxiliary sound generation means is a sound generating paddlewheel disposed in a fluid flow path between the fluid inlet and the fluid outlet.

10. The UV fluid treatment system of claim 8, wherein the auxiliary sound generation means is a sound generation reed disposed at the fluid inlet.

11. The UV fluid treatment system of claim 1, wherein the intelligent driver includes a lamp driver circuit under control of a ballast microprocessor.

12. The UV fluid treatment system of claim 11, wherein the ballast microprocessor is reprogrammable.

13. A sensor unit for an ultraviolet (UV) fluid treatment system for small enterprise and consumer use, comprising:

a plurality of sensing means contained within a housing, the housing permitting the plurality of sensing means to be mounted within a fluid treatment zone of the UV fluid treatment system; and

a sensor microprocessor, contained within the housing, for reading and processing information received from the plurality of sensing means to provide operational parameters to an intelligent driver controlling a UV emitter disposed within the fluid treatment zone.

14. The sensor unit of claim 13, wherein the plurality of sensing means includes fluid flow sensing means to sense fluid flow within the fluid treatment zone, and UV sensing means to sense UV light levels within the fluid treatment zone.

15. The sensor unit of claim 14, wherein the fluid flow sensing means includes sound/vibration sensing means.

16. The sensor unit of claim 15, wherein the fluid flow sensing means includes sound/vibration generation means.

17. The sensor unit of claim 15, wherein the sound/vibration sensing means is a microphone.
18. The sensor unit of claim 15, wherein the sound/vibration generation means is an acoustical sounder.
19. The sensor unit of claim 15, wherein the sound/vibration generation means is a piezo-element.
20. The sensor unit of claim 13, wherein the sensor microprocessor receives information relating to fluid from auxiliary sound generation means.
21. A intelligent driver for an ultraviolet (UV) emitter in a fluid treatment system for small enterprise and consumer use, comprising:  
a ballast microprocessor for receiving a plurality of fluid condition indications from a sensor unit, and for controlling operation of the UV emitter in response to at least one of the fluid condition indications; and  
an indicator in communication with the ballast microprocessor for providing a user with information related to operation of the fluid treatment system.
22. The intelligent driver of claim 21, wherein the plurality of fluid condition indications includes a fluid flow indication and a UV light level indication.
23. The intelligent driver of claim 21, including a lamp driver circuit under control of the ballast microprocessor.
24. The intelligent driver of claim 21, including an alarm for indicating system malfunction to a user.
25. The intelligent driver of claim 21, including a safety interlock for detecting improper connection of the UV emitter.
26. The intelligent driver of claim 21, wherein the ballast microprocessor is re-programmable.

27. The intelligent driver of claim 21, wherein the indicator includes a display for displaying at least one of text and graphics.